

نام و نام خانوادگی: (محل امضا و مهر) پاسخنامه تشریحی تکلیف شماره ۷ ... کلاس: A

$$f(x) = \sqrt{x+2} \sqrt{x-2} + g(x) = \sqrt{x+2} \sqrt{x-2} = A \Rightarrow x-2=2$$

$$\Rightarrow A^2 = x+2 + \sqrt{x^2-4} = x+2 + \sqrt{(x-2)^2} = 2x-4 = A^2$$

$$\Rightarrow A = \sqrt{2x-4} = \sqrt{x-2} \Rightarrow a+b=2, c=-2$$

$$\Rightarrow \frac{a+b}{c} = -\frac{1}{2}$$

$$f(x) = \frac{x+2}{x^2-2x+2}, \quad g(x) = \{(2,1), (1,0), (2,0), (0,2)\}$$

$$f(x) = \frac{x+2}{(x-1)(x-2)} \Rightarrow f(1) = \infty, f(2) = -2 \Rightarrow \frac{g}{f} = \left\{ \frac{1}{-2}, \frac{2}{\frac{2}{-2}} \right\}$$

$$f(0) = 1, f(\infty) = 0 \Rightarrow \frac{g}{f} = \left\{ -\frac{1}{2}, 4 \right\}$$

$$f(x) = \{(1,2), (2,-1), (2,2), (-1,4)\} \quad g(x) = \{(2,2), (1,-1), (2,2), (-1,0)\}$$

$$f(x) = \left\{ \left(\frac{1}{2}, 2 \right), \left(\frac{2}{3}, -1 \right), (2,2), (-1,4) \right\}$$

$$f(x) = \left\{ \left(\pm 1, 2 \right), \left(\pm \sqrt{2}, -1 \right), (\pm 2, 2) \right\}$$

$$xg^2(x)+1 = \{(1,9), (2,8), (2,9), (-1,10)\}$$

$$\Rightarrow \frac{xf}{g} = \{(1,4), (2,3), (-1, \frac{10}{9})\}$$

$$f(x) = \{(2,1), (2,1), (2,9), (-2,0)\} \quad g(x) = \{(2,1), (2,2), (-2,4), (-1,2), (2,2)\}$$

$$h = xf + g = \{(2,3), (2,0), (-2,4)\}$$

$$f(x) = \frac{\sqrt{5x-x^2}}{x-2}, \quad g(x) = [x] + [-x] \Rightarrow \left(\frac{f}{g+1} \right)^2 = \frac{\sqrt{5x-x^2}-x}{[x]+[-x]+1}$$

$$\Rightarrow [x] + [-x] \neq -1 \Rightarrow x \in \mathbb{Z} \quad \& \quad x-2 \neq 0 \Rightarrow x \neq 2$$

$$\sqrt{5x-x^2} \geq 0 \Rightarrow x \geq 0 \quad \& \quad \sqrt{5x-x^2} \geq 0 \Rightarrow 0 \leq x \leq 5 \Rightarrow \bigcap = \bigcap = 0 \leq x \leq 5 - \{2\}$$

$f(x) = \sqrt{ax^2 - x^2 - 4} \quad , \quad g(x) = \{(1,0), (2,1), (3,4), (a,1)\}$ $\Rightarrow f(x) = \{(1,0), (2,1), (3,4), (a,1)\}$ $\Rightarrow \frac{f(x)}{g(x)} = \{(1,0), (2,1), (3,4), (a,1)\}$	6
$\text{a)} y = x^4 - 4x^2 + 4x \Rightarrow y = (x-1)^2 + 1 \Rightarrow y-1 = (x-1)^2$ $\Rightarrow \sqrt{y-1} = x-1 \Rightarrow x = \sqrt{y-1} + 1 \Rightarrow R_f = \mathbb{R}$ $\text{b)} y = \frac{1}{x^2 - 4x} \Rightarrow yx^2 - 4yx = 1 \Rightarrow yx^2 - 4yx - 1 = 0$ $\Rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{4y \pm \sqrt{16y^2 + 4y}}{2y} \Rightarrow 2y^2 + 4y \geq 0 \Rightarrow y \leq -1 \vee y \geq 0 \quad \{y=0 \Rightarrow -1\} \Rightarrow R_f = \mathbb{R} - (-1, 0)$	7
$\text{a)} y = x^2 - 4x + 10$ $\Rightarrow \text{ext} \bigg _4 \Rightarrow R_f = [4, +\infty)$ $\text{b)} -x^2 + 4x + 1 = y$ $\text{ext} \bigg _{12} \Rightarrow R_f = (-\infty, 12]$ $\text{c)} y = \sqrt{x^2 - 4x - 4} \Rightarrow \text{ext} \bigg _{-4} \Rightarrow R_f = [-4, +\infty)$ $\Rightarrow R_f = \sqrt{[-4, +\infty)} = [0, +\infty)$ $\text{d)} \sqrt{-x^2 + 4x} = y \Rightarrow \text{ext} \bigg _2 \Rightarrow R_f = [-\infty, 2] = (-\infty, 2]$	8
$\text{a)} y = x^3 - 3x^2 + 2x + 1 \Rightarrow R_f = \mathbb{R}$ $\text{b)} y = x^3 - 4x^2 + 4x + 1 \Rightarrow R_f = \mathbb{R}$ $\text{c)} y = \sqrt{x^3 - 4x^2 + 4x + 1} \Rightarrow R_f = \sqrt{\mathbb{R}} = [0, +\infty)$ $\text{d)} y = (x^3 - 4x^2 + 4x + 1)^2 \Rightarrow R_f = [0, +\infty)$	9
$\text{a)} y = \frac{x+1}{x-2}$ $R_f = \mathbb{R} - \{2\}$ $\text{b)} y = \frac{x+1}{x+1}$ $\Rightarrow R_f = \mathbb{R} - \{1\}$	10